

REMARKS

Claims 1-6 are pending in this application and have been amended in order to further explain the process conditions change monitoring system of the present invention.

Claims 1-6 stand rejected under 35 U.S.C. § 112 as being indefinite for “failing to particularly point out and distinctly claim the subject matter which application regards as the invention.” (Office Action at 2). Specifically, the Office Action asserts that there is insufficient antecedent basis for the limitation “the models,” recited in claims 1 and 3. The Office Action further asserts that claims 1 and 3 are indefinite and unclear as being an English translation of a foreign document. Applicants respectfully submit that this rejection is now moot in light of the current amendments to claims 1 and 3.

Claims 1-6 stand rejected under 35 U.S.C 103(a) as being unpatentable over U.S. Patent No. 5,969,273 to Archie et al. (“Archie”) in view of U.S. Patent No. 6,137,578 to Ausschnitt (“Ausschnitt”). Applicants respectfully traverse this rejection.

The Office Action concedes that Archie fails to teach or suggest “a dimensional characteristic detection means,” that utilizes “the respective dimensional characteristic quantities of a first pattern portion and a second pattern portion,” as required by amended independent claims 1 and 3. However, Archie also fails to teach or suggest first and second pattern portions that “are different from one another in the tendency of the changes in dimensional characteristic quantities showing the edge widths and/or pattern widths of the resist patterns versus changes in exposure conditions,” as further required by claims 1 and 3. Instead, Archie teaches an apparatus for comparing the difference between a measured edge width and a baseline edge

width to a threshold value. (*See* column 3, lines 49-59). If the difference is less than the threshold value, then the process under scrutiny is determined to be operating within specification. (*Id.*). Furthermore, if the difference is greater or equal to the threshold value, then a diagnostic process is performed so as to remove measuring error generated by fluctuation of the measurement device. (*Id.*).

Moreover, the object of the present invention is to supply process conditions change monitoring systems and methods that are able to detect changes in exposure level and focus value of a photolithography machine and accurately shift both exposure level and focus value as necessary. Such systems and methods are quite different from those disclosed in Archie.

The Office Action further asserts that Ausschnitt in combination with Archie, overcomes the deficiencies of Archie, as Ausschnitt teaches a dimensional characteristic detection means, which calculates the respective dimensional characteristic quantities of a first pattern portion and a second pattern portion. (Office Action at 3). Ausschnitt teaches a target for measuring critical dimensions through measuring the variation in pattern length and width. (*See* Column 4, lines 5-43). Furthermore, Ausschnitt discloses an optical-type inspection device, wherein measurement of the pattern length is necessary. Claims 1 and 3, however, each recite a “monitoring system of a scanning-type electronic microscope,” and requires “an image detection unit for obtaining electron beam images of said resist patterns.” Furthermore, the dimensional characteristic quantity detection means of claims 1 and 3 requires detecting changes in the edge widths and/or pattern widths of the resist patterns against changes in exposure conditions. Such measurement of edge width is a characteristic feature of a monitoring system utilizing a scanning-type electronic microscope. Thus, there would be no motivation for one of ordinary skill in the art to combine the teachings of Archie and Ausschnitt to arrive at the claimed invention.

Even if such motivation to combine Archie and Ausschnitt exists, the Office Action fails to present a prima facie case for obviousness, as the combination of Archie and Ausschnitt fails teach or suggest all limitations of claim 1 and 3, as described above. Withdraw of this rejection is respectfully requested. Claim 2 depends from claim 1 and is therefore allowable for at least the reasons stated above. Likewise, claims 4-6 depend from claim 3 are therefore allowable for at least the reasons stated above.

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. According, the Examiner is respectfully requested to pass this application to issue.

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Respectfully submitted,

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